

MA 237-02 §1.5 – 2.2	Quiz #3	score	Name: _____ 14 February 2002
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1. Create a 2×3 matrix A so that the equation $AX = B$ is solvable if and only if B belongs to the line spanned by the vector $[1, 2]^t$. Choose the matrix A so that no two of its entries are the same. (5 points)

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2. Calculate the nullspace of the given matrix. Express your answer as a span. (5 points)

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{bmatrix}$$

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3. Your job is to determine if the vectors $[1, 2, 3]^t$, $[1, 0, 1]^t$, and $[2, 1, 2]$ are independent. You are given that the following matrices are row-equivalent. Use this information and explain your answer. (5 points)

$$\begin{bmatrix} 1 & 1 & 2 \\ 2 & 0 & 1 \\ 3 & 1 & 2 \end{bmatrix} \rightarrow \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

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4. Do the vectors in the previous problem form a basis for \mathbb{R}^3 . Explain. (5 points)